

## **What is claimed is:**

**[Claim 1]** A system for providing an audience with a visual or tactile presentation representative of perceived sound comprising:

- a. a signal reception with a microphone, an AGC circuit and an A/D circuit wherein a digital signal corresponding to the sound is created;
- b. a processor instructed to perform a human-like auditory transformation on the digital signal such that a multi-channel digital signal is created;
- c. the processor further instructed to perform a time-sequence scaling of each channel of the multi-channel digital signal; and
- d. a presentation with a multi-channel D/A circuit and multi-channel visual or tactile presentation controls such that the presentation provides the audience a visual or tactile presentation representative of the sound.

**[Claim 2]** The system for providing an audience a reception of sound and a visual or tactile presentation representative of the sound as in claim 1 further comprising the signal reception uses a sound storage device providing a digital signal corresponding to the sound, and a sound presentation device providing the sound.

**[Claim 3]** The system for providing an audience a reception of sound and a visual or tactile presentation representative of the sound as in claim 1 further comprising the signal reception uses a sound storage playback device providing an analog signal corresponding to the sound to the AGC, and a sound presentation device providing the audience the sound.

**[Claim 4]** The system for providing an audience a reception of sound and a visual or tactile presentation representative of the sound as in claim 1 further comprising the processor is instructed to perform beat detection and applying the resulting beat component to one or more channels of the multi-channel digital signal.

**[Claim 5]** The system for providing an audience a reception of sound and a visual or tactile presentation representative of the sound as in claim 1 further comprising the human-like auditory transformation includes a human hearing model selected from the group consisting of critical bands, mel scale, bark scale, equivalent rectangular bandwidth, and just noticeable difference.

**[Claim 6]** The system for providing an audience a reception of sound and a visual or tactile presentation representative of the sound as in claim 1 further comprising the processor and processor instructions are an Application Specific Integrated Circuit.

**[Claim 7]** The system for providing an audience a reception of sound and a visual or tactile presentation representative of the sound as in claim 1 further comprising the processor and processor instructions are contained in a general-purpose computer.

**[Claim 8]** A method of providing a visual or tactile presentation that is representative of the human perception of sounds comprising:

- a. receiving an acoustic signal;
- b. performing a human-like auditory transformation of the signal such that the signal has multiple channels;
- c. time-sequence scaling the transformed signal;
- d. providing an audience a visual or tactile presentation of the transformed signal.

**[Claim 9]** The method of providing a visual or tactile presentation that is representative of the human perception of sounds as in claim 8 further comprising step a is:

- a. selecting an acoustic signal from sound storage playback;

**[Claim 10]** The method of providing a visual or tactile presentation that is representative of the human perception of sounds as in claim 8 further comprising step b. is:

- b. performing a human-like auditory transformation of the signal such that the signal has multiple channels, determining a beat component, and incorporating the beat component in one or more of the transformed signal channels;

**[Claim 11]** A computer-readable medium having computer-executable instructions for performing a method comprising:

- a. receiving an acoustic signal;
- b. performing a human-like auditory transformation of the signal such that the signal has multiple channels;
- c. time-sequence scaling the transformed signal;
- d. providing an output signal for audience presentation of the transformed signal.

**[Claim 12]** The computer-readable medium having computer-executable instructions for performing a method as in claim 11 further comprising step a. is:

- a. selecting an acoustic signal from sound storage playback;

**[Claim 13]** The computer-readable medium having computer-executable instructions for performing a method as in claim 11 further comprising step b. is:

- b. performing a human-like auditory transformation of the signal such that the signal has multiple channels, determining a beat component, and incorporating the beat component in one or more of the transformed signal channels;

**[Claim 14]** A device for providing a visual, or tactile presentation that is representative of the human perception of sounds comprising:

- a. means for acoustic signal reception;
- b. means for a human-like auditory transformation of the acoustic signal such that the signal has multiple channels;

- c. means for time-sequence scaling the transformed signal; and
- d. means for audience perception of the transformed signal.

**[Claim 15]** The device for providing a visual, or tactile presentation that is representative of the human perception of sounds as in claim 14 further comprising the means for a human-like auditory transformation of the acoustic signal includes means for determining and incorporating a beat component in the transformed signal.

**[Claim 16]** The device for providing a visual, or tactile presentation that is representative of the human perception of sounds as in claim 14 further comprising the means for acoustic signal reception is selected from the group comprising a microphone and sound storage playback.

**[Claim 17]** The device for providing a visual, or tactile presentation that is representative of the human perception of sounds as in claim 14 further comprising the means for time-sequence scaling the transformed signal is a comparison of the current and the previous time period signal value ranges to a desired range and adjustment of the current value as necessary to maintain the desired range.

**[Claim 18]** The device for providing a visual, or tactile presentation that is representative of the human perception of sounds as in claim 14 further comprising the means for a human-like auditory transformation of the acoustic signal is:

- a. a device to convert a duration of the received acoustic sound from an analog electrical signal to a digital signal;
- b. a device to perform a Fast Fourier Transform of the received acoustic sound; and
- c. a device for segregating the fast Fourier transform frequency band output into two or more presentation channels using a human hearing model grouping selected from the group consisting of critical bands, mel scale, bark scale, equivalent rectangular bandwidth, and just noticeable difference.

**[Claim 19]** The device for providing a visual, or tactile presentation that is representative of the human perception of sounds as in claim 18 further comprising the means for determining and incorporating a beat component in the transformed signal is derived from summing the output of the Fast Fourier Transform of the acoustic signal.